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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/982,484	10/18/2001	Yuji Katsuda	811_001	7015

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EXAMINER
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STEIN, STEPHEN J

ART UNIT	PAPER NUMBER
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1775

DATE MAILED: 10/09/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/982,484

Applicant(s)

KATSUDA ET AL.

Examiner

Stephen J Stein

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1775

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-75 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-8,10-19,21,22,26-34,36,37,41-50,52,53,57-66,68,69 and 72 is/are rejected.
- 7) ☒ Claim(s) 3,9,20,23-25,35,38-40,51,54-56,67 and 73-75 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

2. Claims 1, 2, 4-8, 10-19, 21, 22, 26-34, 36, 37, 41-50, 52, 53, 57-66, 68, 69 and 72 are rejected under 35 U.S.C. 102(e) as being anticipated by US Patent 6,403,510 (Kuibira et al.).

Kuibira discloses an aluminum nitride sintered body comprising a complex compound oxide of  $\text{Sm}_2\text{O}_3 \cdot \text{Al}_2\text{O}_3$  ( $\text{SmAlO}_3$ ) (1:1 molar ratio) and/or  $\text{Sm}_2\text{O}_3 \cdot 11\text{Al}_2\text{O}_3$  ( $\text{SmAl}_{11}\text{O}_{18}$ ) (col. 2, lines 65-66 and col. 5, lines 1-11). Kuibira further teaches that a second rare earth element of Y in the form of a complex oxide of yttrium may be included into the ceramic at weight percentage of 1.5 – 3.0 wt.% and the  $\text{Sm}_2\text{O}_3$  has a weight percentage of 1.0-2.5% (See Table 2). (e.g. the molar ratio of the converted content of the yttrium as yttrium oxide to the converted content samarium as samarium oxide is less than 2.0 and the molar ratio of the converted content of all the rare earth elements as rare earth oxides to the aluminum oxide is between 0.05 to 0.5). Further, the reference discloses that the  $\text{Sm}_2\text{O}_3$  content may be at a weight percent of 15.0 % (e.g. the molar percent of the  $\text{Sm}_2\text{O}_3$  is 0.43%). (See table 1, sample 37). With regard to the

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claimed properties of the activation energy of temperature dependency of volume resistivity from room temperature to 300 °C, volume resistivity, lightness, and the limitation that the samarium-aluminum complex oxide forms a network microstructure, it is expected that disclosed ceramic would have these properties since the prior art is disclosing the same composition as that disclosed by applicants. It has been held that where the claimed and prior art products are identical or substantially identical in structure or are produced by identical or a substantially identical processes, a *prima facie* case of either anticipation or obviousness will be considered to have been established over functional limitations that stem from the claimed structure. *In re Best*, 195 USPQ 430, 433 (CCPA 1977), *In re Spada*, 15 USPQ2d 1655, 1658 ( Fed. Cir. 1990). The *prima facie* case can be rebutted by evidence showing that the prior art products do not necessarily possess the characteristics of the claimed products. *In re Best*, 195 USPQ 430, 433 (CCPA 1977).

3. Claims 58, 70 and 71 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent 4,659,611 (Iwase et al.).

Iwase et al. discloses a sintered ceramic substrate containing 1% elemental samarium (abstract and col. 9, lines 54-61). Iwase further teaches that the AlN substrate is coated with a copper paste and fired to form a pattern of electrically conductive paths (col. 9, lines 62-66).

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*Allowable Subject Matter*

4. Claims 3, 9, 20, 23-25, 35, 38-40, 51, 54-56, 67 and 73-75 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

5. The following is a statement of reasons for the indication of allowable subject matter: As stated above, while the prior art of record, discloses a sintered aluminum nitride substrate having samarium oxide, the prior art fails to teach or suggest the addition of a transition element from group IVA-group VIIIA of the periodic table and additionally fails to teach or suggest that the aluminum nitride grain size is not lower than 3  $\mu$ .

*Conclusion*

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen Stein whose telephone number is (703) 305-0583. The examiner can normally be reached on Monday through Friday from 8:30 a.m. to 5:00 p.m. If the attempts to reach the examiner are unsuccessful, the examiner's supervisor, Deborah Jones can be reached by dialing (703) 308-3822. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group Receptionist whose phone number is (703) 308-0661. The fax phone number for this group is (703) 872-9310 for non-final responses and (703) 872-9311 for after final responses.

October 3, 2002

  
Stephen J. Stein